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(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1469 Roll No.

M.C.A.

(SEM. II) EXAMINATION, 2006-07

PARADIGM OF PROGRAMMING LANGUAGE

(SPECIAL EXAMINATION)

*Time : **3** Hours]* *[Total Marks : **100***

Notes : *(i) Attempt **all** questions*

*(ii) All questions carry **equal** marks.*

1 Attempt any **two** parts of the following :

(a) Draw the block diagram of a translator and explain its working. What are the virtual computers ? What is the difference between emulation and simulation of a machine ?

(b) Consider the following language x and y are integers. Each statement may have a label as a prefix. Statements in this language are as follows with their meaning :

x = y	copy y into x
x = x + 1	increase x by 1.

x = x*y multiply x by y.
if x = then goto L transfer control to L if x is zero
if x > 0 then goto L transfer control to L if x is positive.

Using these statements write a program to calculate the factorial of 10.

(c) What are the different factors affecting the evolution of a programming language ? What are desirable features a language that it should contain ?

2 Attempt any **two** parts of the following :

(a) Differentiate between the specifications of vectors and arrays. What are schemes for the construction of records ? What are the set files ?

(b) What are the different parameter passing methods ? What are the different scope rules for a variable and a function or routine ?

(c) (i) Derive an expression for calculating the address of an element in two dimensional array stored in the column major order. The address of first element is α.

(ii) What are the enumerated data object variables ? How are they different from strings ? How could they be initialized ? Explain with one example.

3 Attempt any **two** parts of the following :

(a) Write a program to implement a queue in any object oriented language.

(b) What is encapsulation ? What is the difference between early binding and late binding ? How the run time polymorphism is achieved ?

(c) What are the different types of inheritance in C++ ? How the accessibility of base class variables is controlled in these schemes ?

4 Attempt any **two** parts of the following :

(a) What is functional programming ? Explain the terms referential transparency in it. How the recursive functions differ from non-recursive functions ?

(b) How the polymorphic functions are created in functional programming ? What are the curried functions ? How the un-curried operations are carried out ?

(c) What are the lists ? How are they created ? How user defined data types are created in ML ? What are rules applied for their evaluation ?

5 Attempt any **two** parts of the following :

(a) Consider the following relations :

H(x) : x works hard

D(x) : x is dull

J(x) : x has got a job.

Convert the following statement to relations using above relations.

(i) Randy Works Hard.

(ii) if Randy works hard then he is a dull boy.

(iii) If Randy is dull boy then he will not get the job.

(iv) Therefore, Randy will not get the job.

(b) Write note on the following :

(i) Abstract Interpreter for logic programs

(ii) SKD Resolution

(c) Write short note on the following :

(i) Negation as failure extension

(ii) Predicate logic, universal and existential queries.
